

Zoological Record

Vol. 94, Sect. 2, 1957

# PROTOZOA

COMPILED BY

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LONDON

PUBLISHED BY

THE ZOOLOGICAL SOCIETY OF LONDON

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PRICE TEN SHILLINGS

May, 1960

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## FOREWORD

Papers dealing with Protozoa entirely from a medical or veterinary standpoint (clinical, therapeutic, etc.) are omitted, but notices of these will be found in *Tropical Diseases Bulletin* and *Veterinary Bulletin*.

*It is regretted that literature dealing with fossil protozoa published in 1957 is not included. This will be included in the next volume.*

## I.—TITLES

The year of publication has been omitted where it is the same as the volume year of the "Record", namely (1957).

**Direction 76.** Completion, and, in certain cases, correction of entries relating to the names of genera belonging to the Phyla Protozoa, Coelenterata, Platyhelminthes, Nemathelminthes and Annelida, made on the *Official List of Generic Names in Zoology* by Rulings given in *Opinions* rendered in the period up to the end of 1936. Opin. int. Comm. zool. Nom. **1 E** (14) : 227-264.

**Direction 77.** Addition to the *Official List of Specific Names in Zoology* (a) of the specific names of thirty-four species belonging to the Phyla Protozoa, Coelenterata, Platyhelminthes, Nemathelminthes, and Annelida, each of which is the type species of a genus, the name of which was placed on the *Official List of Generic Names in Zoology* in the period up to the end of 1936 and (b) of five specific names which are currently treated as senior subjective synonyms of the names of such species. Opin. int. Comm. zool. Nom. **1 E** (15) 1957 : 265-292.

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**Regeneration ; Degeneration.** — Lysis of *Trichomonas augusta* by serum, R. **Samuels** (3); Increase in number of micronuclei during regeneration of *Spirostomum ambiguum*, B. R. **Seshachar** & P. B. **Padmavathi** (2); Equivalence of macronuclear nodes, V. **Tartar** (2); Loss of peristome by *Stentor*, V. **Tartar** (4).

**Locomotion ; Movement.**—Locomotion in some microscopic pond-living organisms, H. G. S. **Wright** (1); Contractile systems in protozoa, J. T. **Randall** (1); Movement of amoebae, R. J. **Goldacre**; Amoeboid movement, L. E. **Noland**; Movements of *Trichomonas* in viscous medium, M. P. **Barretto** & **Zago Filho**, H. (1); Effect of intracellular injections upon ciliary movement in *Opalina*, K. **Veda**; Direction of metachronal waves in the *Ciliata*, B. **Párducz** (3); Chemistry of cilia, F. M. **Child** (2); Ciliary antigens of *Paramecium aurelia*, P. **Margolin**; Effect of components of human body fluids on locomotion of *Paramecium*, A. **Montanari** (2);

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**Sexuality.**—Relationship between ecdysis and sexual cycle of protozoa, L. R. **Cleveland** (2); Sexual reproduction in colonial green flagellates, R. C. **Starr** & A. D. **Wilbois**; Evidence against sexuality in *Trypanosoma gambiense*, Y. U. **Amrein**; Similarities between the life cycle of a ciliate and development of the fertile metazoan egg, A. **Russo** (1); Hermaphroditism in a ciliate, and the metazoan counterpart, A. **Russo** (2); "Latent sexuality" as a common factor with a ciliate and a cancer cell, A. **Russo** (3); Mating types of variety 9 of *Tetrahymena pyriformis*, A. M. **Elliott** & G. M. **Clark** (3); Mating types in *Paramecium*, A. C. **Giese** (2); Mating type inheritance in *Paramecium*, D. L. **Nanney** (2); Diurnal change in mating type in *Paramecium*, T. M. **Sonneborn** (4); Hybrid vigour in *Paramecium aurelia*, R. W. **Siegel** (2); Sexuality in *Paramecium caudatum*, E. **Vivier**; Mating types of *Paramecium bursaria* found in China, T.-T. **Chen**; Sexual behaviour of *Trichonympha*, L. R. **Cleveland** (1).

**Effects of physical factors.**—Faunal and physical considerations of seasonal plankton fluctuations, C. M. de **Angelis**; Twenty-four hour rhythms in microorganisms, V. G. **Bruce** & C. S. **Pittendrigh** (2); Review of the effects of radiation, R. F. **Kimball**; Effect of temperature on excystation of amoeba, B. **Hajra** (1); Temperature tolerance of *Acanthamoeba*, B. **Hajra** (2); Alkaline tolerance of *Entamoeba invadens*, S. **Mookerjee** & H. N. **Ray**; Effect of ultraviolet light on *Entamoeba histolytica*, M. **Nakamura** (2); Effect of  $^{60}\text{Co}$  and fission neutrons on *Pelomyx illinoisensis*, H. H. **Vogel Jr.** & E. W. **Daniels**; Recovery of irradiated *Pelomyxa illinoisensis* by microinjec-

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*hymena* and related ciliates above 35° C., G. G. Holz; Mechanism of heat-shock synchronisation of *Tetrahymena*, O. H. Scherbaum & T. L. Jahn; Effect of temperature on multiplication rate of *Tetrahymena*, D. M. Prescott (1); Effect of temperature on size of *Tetrahymena*, T. W. James & C. P. Read; Amicronucleate *Tetrahymena* produced by X-rays, C. C. Speidel (2); Effect of X-rays on *Tetrahymena*, A. M. Elliott & G. M. Clark (5); Ultraviolet susceptibility of *Tetrahymena*, R. M. Iverson & A. C. Giese; X-rays on *Tetrahymena corlissi*, C. C. Speidel (1); Effect of U-V irradiation on lysis by high pressure on *Blepharisma undulans*, H. I. Hirshfield, etc.; Effect of temperature on feeding of *Podophrya*, R. W. Hull (1).

**Effects of chemicals.**—Effect of kinetine on protozoa, J. Supniewski & T. Marczynski; Nitrogen mustard inducing amoeba-to-flagellate change in *Tetramitus rostratus*, M. M. Brent; Action of drugs on *Entamoeba invadens* and *E. histolytica* in vitro, I. de Carneri (3); Effect of various compounds on *E. histolytica* in vitro, L. Magaouda-Borzi & L. Pennisi; Effect of purine and pyrimidine analogues on *Entamoeba*, M. Nakamura & S. Jonsson; Cycloserine on *Entamoeba histolytica*, M. Nakamura (6); Inhibition of *Entamoeba histolytica* by diazobarbituric anhydride in vitro, M. Nakamura (7); Growth of *Entamoeba histolytica* with nucleic acid derivatives, M. Nakamura (8); Effect of imidazole compounds on *Entamoeba histolytica*, M. Nakamura (1); Dihydrocholesterol inhibition of *Entamoeba histolytica*, M. Nakamura (4); Penicillin on small race *Entamoeba histolytica* in culture, J. G. Shaffer, P. Conner & G. Rosenthal; Effect of dyes on *Entamoeba histolytica*, A. E. J. Yoo & G. A. Emerson; Dinitrophenol on soil amoebae, B. Hajra & S. Mookerjee; Sensitivity of *Pelomyxa* to antibiotics, R. M. Nardone (2); Action of insulin on *Chaos chaos*, L. V. Heilbrunn, etc.; Cross-resistance to p-aminobenzoic acid and isonicotinic acid hydrazide in *Chilomonas*, R. P. Hall (1);



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resistant to pyrimethamine, M. D. Young (2); Suppression of *Babesia* by cod liver oil and its reversal by vitamin E, D. G. Godfrey (1); Desoxyypyridoxime on *Toxoplasma*, W. A. Summers; Mode of action of sulphadiazine and pyrimethamine on *Toxoplasma*, J. K. Frenkel & G. H. Hitchings; Temperature and pressure on oxygen poisoning of *Paramecium*, M. Wittner (1); Inhibition and reversal of oxygen poisoning in *Paramecium*, M. Wittner (2); Effect of chemicals on phagocytosis in *Paramecium caudatum*, L. N. Seravin; Effect of extracts of garlic and onion on *Paramecium caudatum*, J. Kiersz & H. Zobanowska; Interaction between stigmasterol and 2,4-dinitrophenol on *Tetrahymena pyriformis*, R. L. Conner; Effects of carcinogens on *Tetrahymena*, C. Krock & A. C. Giese; Development of resistance to *p*-aminosalicylic acid by *Colpoda cucullus*, T. Franceschi; Effect of isoniazid upon *Colpoda cucullus*, T. Franceschi & G. Serrato; Effect of urethane on growth of *Spirostomum ambiguum*, B. R. Seshachar & P. B. Padmavathi (1).

**Cyst-formation.**—Encystation of marine protozoa, R. Hirano & Y. Ohshima; Encystment in *Hartmannella*, D. L. Ray; Encystation of *Entamoeba histolytica*, L. Lamy & V. Molinari; Encystation of *Entamoeba*, W. Balamuth; Induced encystation of *Entamoeba*, R. de Blasi & M. L. Ricciardi; Encystment of Radiolaria, A. Hollande & M. Enjume; Sporulation of coccidia, Z. M. Kogan; Factors affecting the liberation of sporozoites from *Eimeria tenella* oocysts, M. Ikeda (1), (2); Emergence of the sporoplasm in Microsporidia, A. S. Dissanaik & E. U. Canning; Cysts of *Tetrahymena*, D. D. Hurst (2).

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**Cultivation.**—Cultivation of marine protozoa, R. Hirano & Y. Ohshima; Axenic cultivation of *Acanthamoeba*, R. J. Neff (1); Method for obtaining clone cultures of soil amoebae, D. Harrison; Cultivation of *Amoeba*, M. Taylor (2); Culture of *Amoeba dubia*, J. A. Dawson (3); Culture of *Amoeba proteus* and *A. dubia*, J. A. Dawson (2); *Pelomyxa* cultured with single protozoan species, R. M. Nardone (1); Preparation of axenic cultures of *Pelomyxa carolinensis*, R. M. Nardone (3); Cultivation of *Pelomyxa palustris*, R. R. Kudo; Growth of *Entamoeba* in cell-free medium, H. D. Baernstein, C. W. Rees & I. L. Bartgis; *Entamoeba* found at surface of cultures, P. Conner, G. Rosenthal and J. G. Shaffer; *Entamoeba* growth in various culture media, L. Capocaccia (2); Absence of growth of *Entamoeba* with *Trichomonas*, H. Baba (1); Cultivation of small race *Entamoeba histolytica* in blood medium, R. M. McQuay; Modified Shaffer-Frye method for growing *Entamoeba histolytica*, R. E. Reeves, H. E. Meleney & W. W. Frye (2); *Entamoeba histolytica* cultured with chick embryo tissue juice, R. E. Reeves, H. E. Meleney & W. W. Frye (1); Bacteria and growth of *Entamoeba*, K. Suzuki (2); Bacterial factors in growth of *Entamoeba*, K. Suzuki (1); Axenic growth of *Entamoeba invadens*, N. R. Stoll; Growth studies of mixed ciliate and flagellate cultures, S. Mučibabić (2); Cultivation of haemoflagellates from insects A. Packchianian (2); Growing *Ochromonas* above 35°C., S. H. Hutner & others; New medium for *Leishmania*, H. Medina & M. Bacila; Axenic cultivation of trichomonads, L. S. Diamond; Cultivation of *Trichomonas*, S. M. Pak; Influence of bacteria on growth of *Trichomonas*, C. Moriguchi (4); Culture of *Trichomonas foetus*, E. Hess; Cultivation of *Trichomonas foetus*, S. A. Azhinov; Culture of *Trichomonas tenax*, I. de Carneri (1); Monaxenic cultivation of *Trichomonas tenax*, B. M. Honigberg, M. Mandel, J. J. Lee & S. D. Brauthal; Cultivation of *Trichomonas vaginalis* with tissue, E. Kotcher & A. C. Hoogasian; Cultivation of *Trichomonas limacis*, J. Lom

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**Rhizopoda.**—*Amoeba* to flagellate change of *Tetramitus rostratus* induced by nitrogen mustard, M. M. Brent; Development of *proteus* group amoebae, M. Taylor, C. Hayes & M. Galbraith; Life history of *Amoeba*, M. Taylor (2); Development of *Amoeba proteus*, M. Taylor (1); Development of *Rotaliella*, K. G. Grell.

**Mastigophora.**—Development of *Oodinium*, H. H. Reichenback-Klinke (1); Development of *Astasia cyclopis* sp. n. from free-living to parasitic forms, W. Michajlow; Development of *Leptomonas serpens*, A. J. Gibbs; Development of blood forms of mammalian trypanosomes, E. Reichenow; Polymorphism in *Trypanosoma*, D. J. B. Wijers; Transformation of *Trypanosoma mega* from crithidia to trypanosomes *in vitro*, M. Steinert; Tissue forms of *Trypanosoma cruzi*, S. F. de M. Rêgo; Development of *Trypanosoma cruzi in vitro*, F. Pick; Development of the blood form of *Trypanosoma rangeli*, E. Reichenow; Life cycle of *Trypanosoma nabiasi*, M. S. Grewal (4);

Development of *Trypanosoma garnhami* sp. n., M. S. Grewal (5); Polymorphism in *Trypanosoma brucei* and *T. rhodesiense*, M. T. Ashcroft; Sexual development in *Trichonympha*, L. R. Cleveland (1); Life cycle of *Opalina*, H. Wessenberg.

**Sporozoa.**—Life cycle of *Eimeria adenoides*, M. J. Clarkson; Intracellular development of *Eimeria alabamensis*, L. R. Davis, G. W. Bowman & D. C. Boughton; Life cycle of *Eimeria tenella*, B. S. Gill & H. N. Ray (2); Life cycle of *Eimeria gadi*, T. R. Wilson; Development of *Plasmodium*, R. S. Bray (7); Pre-erythrocytic development of *Plasmodium*, P. C. C. Garnham, R. Lainson & W. Cooper (2); Development of *Plasmodium cynomolgi*, R. S. Bray (5); Pre-erythrocytic development of *Plasmodium knowlesi*, P. C. C. Garnham, R. Lainson & W. Cooper (1); Development of *Leucocytozoon simondi* in ducks, A. M. Fallis, G. F. Bennett & R. C. Ritchie; Life cycle of *Plistophora*, E. U. Canning (1); Life cycle of *Nosema helminthorum*, A. S. Dissanaike (2); Development of Actinomyxidia, J. Janiszewska (2).

**Ciliophora.**—Conjugation in *Paramecium polycaryum*, W. F. Diller; Life history of *Colpoda cucullus*, T. Carter; Hemixis in *Lionotus*, P. N. Ganapati & M. V. Narasimha Rao; Development of oral primordium of *Stentor coerules*, V. Tartar (3); Conjugation of *Vorticella*, E. Mügge; Development of suctoria, J. Kormos & J. Kormos; Determination of the site of bud formation in the Suctoria, J. Kormos & K. Kormos (1), (2); Development of *Thecacinetia*, D. Matthes.

## EVOLUTION & GENETICS

**Evolution; Phylogeny.**—Phylogeny of protozoa, S. Moshkovski; Cellular versus acellular nature of Protozoa, J. O. Corliss, etc.; Sub-microscopic morphology in classification of amoebae, C.-A. Baud & J.-C. Morard; Origin of akinetoplastic trypanosomes, S. Inoki; Affinities amongst Trichomonadida, B. M. Honigberg

(2); Specificity of coccidia, B. Ryšavý; Phylogeny of Cnidosporidia, C. Gottschalk; Phylogeny of Actinomyxidia, J. Janiszewska (1); Evolutionary significance of the structure of the macronucleus in ciliates, E. Fauré-Fremiet (2); Origin of binuclearity in ciliates, I. B. Rajkov; The species problem in ciliated protozoa, T. M. Sonneborn (1); Subnuclear segregation in *Tetrahymena pyriformis*, S. L. Allen & I. V. Schensted; Maturation of *Paramecium aurelia*, R. W. Siegel (1); Phylogeny of *Elliptothigma limnodrili*, P. de Puytorac (1); Origin of higher Ophryoscolecidae, G. Lubinsky (2); Phylogeny of Ophryoscolecidae, G. Lubinsky (3); Significance of predatory habits in Ophryoscolecidae, G. Lubinsky (5); Evolutionary trends in *Entodinium*, G. Lubinsky (1); Phylogeny of Suctoria, M. F. Canella; J. Kormos & J. Kormos.

**Variation.**—Intraspecific variation in Protozoa, G. I. Poljansky; Intraspecific variation in parasitic protozoa, R. D. Manwell (2); Morphological variation in a living miliolid foraminifera, Z. M. Arnold (2); Variation in size and shape of *Eimeria* oocysts, E. M. Cheissin; Antigenic variation of *Paramecium*, G. H. Beale & H. Kacser; Diurnal change in mating type of *Paramecium*, T. M. Sonneborn (4); Variation in numbers of micronuclei in *Paramecium caudatum*, K. Watanabe; New variety of *Paramecium aurelia*, T. M. Sonneborn (3); Antigenic variation in *Paramecium aurelia*, G. H. Beale (1); Variation in *Entodinium*, G. Lubinsky (1).

**Heredity.**—Genetics of protozoa, J. R. Preer (2); Multiple strand crossing over in *Chlamydomonas reinhardtii*, W. T. Ebersold & R. P. Levine; R. P. Levine & W. T. Ebersold; Genetics of *Paramecium*, D. G. Catchside; Inheritance of Kappa in *Paramecium*, J. Huxley; Antigenic relationships between cytoplasmic particles in *Paramecium*, R. W. Siegel & J. R. Preer Jr.; Immobilization antigens of *Paramecium aurelia*, I. Finger (1); Ciliary antigen inheritance in variety 2 of



*Paramecium aurelia*, I. Finger (2); Accumulation of lethal mutations in *Paramecium aurelia*, R. F. Kimball, N. Gaither & S. Wilson (2); Genetics of temperature sensitivity in *Paramecium aurelia*, J. R. Preer Jr. (1); Genetics of *Tetrahymena*, E. Orias; Biochemical mutant in *Tetrahymena*, A. M. Elliott & G. M. Clark (1); Genetics of serine mutant of *Tetrahymena*, A. M. Elliott & G. M. Clark (2); Inheritance of mating type in *Tetrahymena pyriformis*, D. D. Hurst (1); Inbreeding degeneration in *Tetrahymena pyriformis*, D. L. Nanney (1).

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## ECOLOGY

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**Marine.**—Succession of marine fouling organisms, A. A. Aleem; Marine Protozoa of Dale Fort, with geographical and meteorological notes, R. Bassindale & J. H. Barrett; Biocoenoses on sea bottoms with Zosteraceae, P. Parenzan; Phytoplankton of Danish marine inlets, J. Grøntved & E. S. Nielsen; Pelagic microplankton in the west Mediterranean, J. Lecal (2); Fluctuations in numbers of dinoflagellates in California, W. R. Coe; Observations on dinoflagellate blooms, L. R. Pomeroy; H. H. Haskin & R. A. Ragotzkie, Dynamics of a dinoflagellate bloom, R. A. Ragotzkie & L. R. Pomeroy.

**Freshwater.**—Study of fresh-water protozoan fauna, B. W. McCashland; Basic requirements of an aquatic existence, H. G. S. Wright (2); Vertical migration of plankton producing red tide, Y. Yoneda & Y. Yoshida; Plankton population and pollution of a cut-off branch of the River Waal, P. Leentvaar; Succession of protozoa in bamboo in presence of mosquito larvae, Y. Kurihara (1); Succession of protozoa in bamboo in presence of Diptera larvae, Y. Kurihara (2); Ecology of Suctoria, M. F. Canella.

## PARASITISM

### GENERAL

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- Pathogenicity of *Trypanosoma* to vectors, M. S. Grewal (3); Canine trypanosomiasis in Venezuela, R. J. Gómez Rodríguez; Pigment production by guinea pigs infected with *Trypanosoma evansi*, H. G. Sen, A. M. Mukherjee, H. N. Ray & G. Schynoll; Reticulo-endothelial blocking agents on *Trypanosoma congolense* infections, F. C. Goble & J. L. Boyd (3); Mouse and macaque infections with *Trypanosoma rangeli*, A. Herbig-Sandreuter; Progressive anaemia in *Trypanosoma evansi* infections in dogs, Z. de Jesus, etc.; *Trypanosoma cruzi* as a cancerolytic agent, N. G. Kljueva & G. I. Roskin; Stomach infections with *Trypanosoma cruzi*, E. Lesser & J. M. Lukeman; Tissue forms of *Trypanosoma cruzi*, S. F. de M. Rêgo; Immune reaction to metabolic products of *Trypanosoma lewisi*, C. J. Thillet & A. C. Chandler; Distribution of *Leishmania* in the body, P. E. C. Manson-Bahr; Pathology of kala-azar, R. Moise; Host-parasite relation of *Leishmania donovani* in Brazil, J. Rodrigues da Silva; Effect of *Leishmania* on host, A. B. Inogamov; Leishmaniasis in six laboratory rodents, J. Grun & L. A. Stauber; Laboratory infections with *Leishmania enrietti*, A. C. Baker & E. G. Ballesteros; Death of salmon caused by *Trypanoplasma borelli*, A. P. Makeeva; Occurrence of trichomonads in the nose and digestive tract of pigs, D. M. Hammond, P. R. Fitzgerald & A. E. Johnson; Virulence of *Trichomonas* in cats, H. E. Jordan; Pathogenicity of *Trichomonas* to mice, B. M. Honigberg & S. D. Braunthal; Pathogenicity of *Trichomonas vaginalis*, L. G. Vaingrib; Virulence of *Trichomonas vaginalis*, J. Teras; Survival of *Trichomonas vaginalis* in hibernating rats, C. Combescot, A. Domenech & M. Pestre (2); Vaginal pH and *Trichomonas* infection, C. Combescot, M. Pestre & A. Domenech (2); Virulence of *Trichomonas gallinae*, R. M. Stabler (3); Pathogenicity of *Giardia intestinalis*, T. Pizzi (1); Blood pyruvate levels of rats infected with haemoprotozoa, R. M. Coleman & T. von Brand; Penetration of mucosa by *Eimeria*, W. M. van Doorninck & E. R. Becker; Coccidiosis in lambs, L. R. Davis, H. Herlich & G. H. Rohrbacher; Effect of ovine *Eimeria* on the host, R. F. Shumard; Development of rabbit coccidia in various parts of the intestine, E. Cheissin; Coccidiosis in young rabbits, H. Polzin; Host-parasite relationship of *Eimeria tenella*, B. S. Gill & H. N. Ray (2); Castration of pilchards by *Eimeria sardinae*, J. dos Santos Pintos; Effect of B vitamins *Plasmodium*, R. Rama Rao & M. Sirsi (1), (2), (3); Electrophoresis of avian malaria serum, L. A. Schinazi; Reappearance of *Plasmodium reichenowi* after splenectomy, P. C. C. Garnham, R. Lainson & A. E. Gunders; *Plasmodium reichenowi* in chimpanzee, R. S. Bray (4); *Plasmodium vivax* in chimpanzees, R. S. Bray (1); Asexual cycle of *Plasmodium atheruri*, L. van den Berghe, E. Peel, M. Chardome & F. L. Lambrecht (1); Pre-erythrocytic stages of *Plasmodium knowlesi*, P. C. C. Garnham, R. Lainson & W. Cooper (1); Excretion of urobilinogen by monkeys infected with *Plasmodium knowlesi*, A. P. Ray (4); Liver changes in *Plasmodium knowlesi* infections, A. P. Ray (3); Haematological studies in *Plasmodium knowlesi* infection, A. P. Ray (1, 2); Experimental study of new strain of *Plasmodium inui*, A. Mohiuddin; Virulence of *Plasmodium berghei*, P. M. Carrescia & G. Arcoleo (2); Effect of *Plasmodium berghei* on the host, P. M. Carrescia & G. Arcoleo (1); *Plasmodium berghei* in different strains of mice, J. Greenberg & L. P. Kendrick (1), (2); Effect of steroids on glycolysis of liver from *Plasmodium* infected rats, T. I. Mercado & T. von Brand; Influence of casein diet on *Plasmodium berghei* infections in mice, S. Prakash; Mixed infection of *Borrelia* and *Plasmodium* in rats, E. Sergeant; Pathology of *Plasmodium berghei* infections, S. Nakamura, S. Watanabe & C. Fujimoto; Dual infections of *Borrelia hispanica* and *Plasmodium berghei*, E. Sergeant & A. Poncet (1); Distribution of tissue forms of avian plasmodia, C. G. Huff; Effect of virus infections on *Plasmodium lophurae* in ducks, H. R. Jacobs; Effect of splenectomy on

malaria in ducks, R. D. Manwell, M. L. Weiss & A. H. Spandorf; Formation of hydroxy-proline in chicks infected with *Plasmodium*, A. S. Ramaswamy; Host reaction towards tissue stages of *Leucocytozoon*, A. B. Cowan; Development of *Leucocytozoon* in tissues of ducks, J. W. Newberne; Relationship between *Haemoproteus* and mortality of wild quail, C. R. Hungerford; Ecology of piroplasms, W. O. Neitz (2); Host-parasite relationship of *Theileria parva*, G. de Kock; Effect of acute *Babesia canis* infections on the host, B. Maegrath, H. M. Gilles & K. Devakul; Effect of splenectomy on *Babesia* infections, A. Herrer (1); Piroplasm in fish, L. Bouisset, M. Sicart & J. Ruffié; *Nosema* parasitic in *Moniezia*, A. S. Dissanaïke (1); Pathogenicity of *Nosema* in *Aporia crataegi*, J. J. Lipa; Abnormal development of microsporidian infected moth, L. H. Finlayson & V. A. Walters; *Anopheles stephensi* infected with microsporidian, R. Lainson & P. C. C. Garnham; General account of toxoplasmosis, P. C. C. Garnham (3); Histochemical study of liver of *Toxoplasma* infected rats, T. Yamaguchi; Persistence of *Toxoplasma* in chronic infections, L. Jacobs & M. L. Melton (3); Distribution of *Toxoplasma* in the tissues of mice, M. Kihira; Chronic experimental *Toxoplasma* infections, R. Senaga; Host-specificity and virulence of *Toxoplasma*, J. H. Pope, V. A. Bicks & I. Cook; *Toxoplasma* isolated from bandicoot, J. H. Pope, E. A. Derrick & I. Cook; Natural *Toxoplasma* infections in Yugoslav dogs, B. Maržan & T. Wikerhauser; Rabbit toxoplasmosis after ocular inoculation, N. P. Arribas & T. F. Schlaegel; Variation of virulence of strains of *Toxoplasma*, D. E. Eyles, N. Coleman & C. L. Gibson; Attempts to increase virulence of *Toxoplasma* and *Encephalitozoon*, H. Matsubayashi, H. Tazaki & R. Senaga; Effect of gestation on infection with *Toxoplasma*, P. Giroud; Growth of *Toxoplasma* in tissue cultures, E. Chernin & T. M. Weller; Ciliate fauna of seaweed-eating sheep, J. M. Eadie; Host-parasite relationship of *Balantidium*, C. C. Kennedy & R. C. Stewart; Experimental rat infections of *Balan-*

*tidium coli*, A. Westphal; Host-parasite relationship with incompletely known protozoa, H. Harant; Pathology of *Pneumocystis*, A. Bignami & C. Joppolo; Host-parasite relations of *Bartonella*-like blood parasite of cats, E. J. Splitter, E. R. Castro & W. L. Kanawyer.

**Transmission; Infectivity.**—Transmission of *Entamoeba* by water buffalo, J. D. DeCoursey, J. S. Otto & B. S. Holderman; Inoculating rabbits with *Entamoeba histolytica* by a caecal fistula, L. J. Rogova & N. A. Dehkan-Khodzhaeva; Dispersal of parasitic amoebae, R. A. Neal (2); Infectivity of rats to *Trypanosoma*, H. Chihara; Infectivity of *Trypanosoma* spp. to tsetse-flies, J. R. Baker & D. H. Robertson; Trypanosome infections in *Glossina morsitans*, L. van den Berghe, M. Chardome & E. Peel (2); Incidence of trypanosomes in *Glossina pallipides*, L. van den Berghe, M. Chardome, E. Peel & F. L. Lambrecht; Trypanosomes observed in wild *Glossina vanhoofi*, L. van den Berghe, E. Peel & M. Chardome (1); Penetration of peritrophic membrane of *Glossina* by *Trypanosoma*, R. M. Gordon (2); Transmission of trypanosomes, C. A. Hoare (4); Geographical distribution of African trypanosomes, C. A. Hoare (1), (2); Cross infection of *Trypanosoma*, D. L. Lehmann; Transmission of trypanosomiasis in Gold Coast, D. Scott (4); Development of *Trypanosoma* after tsetse-fly bite, K. C. Willett & R. M. Gordon; Infectivity of *Trypanosoma* cultures, D. Weinman; Transformation of *Trypanosoma mega* from crithidia to trypanosomes in culture, M. Steinert; Reservoir hosts of *Trypanosoma cruzi*, L. M. Deane & M. P. Deane; *Triatoma* infected with *Trypanosoma cruzi* in Brazil, L. M. Deane & M. P. Deane; Distribution of *Triatoma* infected with *Trypanosoma cruzi*, M. E. Jöng; Transmission of *T. cruzi* by *Triatoma* and *Rhodnius*, M. M. J. Lavoipierre & R. M. Gordon; Attempts to infect *Triatoma* sp. with *Trypanosoma cruzi*, R. Zeledón & P. L. Viêto; *Triatoma* infected with *Trypanosoma cruzi* in U.S.A., S. F. Wood; Vectors of *Trypanosoma cruzi* in Peru, F. Naquira & N.



- Naquira**; Transmission of *Trypanosoma cruzi* in Peru, A. **Herrer** (2); Effect of serum on *Trypanosoma equiperdum*, W. **Stephanski**; Effect of humidity on infection of *Glossina* with *Trypanosoma vivax*, E. **Roubaud**; New hosts susceptible to *Trypanosoma brucei*, L. van den **Berghe**, M. **Chardome** & E. **Peel** (1); Cyclical transmission of *Trypanosoma brucei* to thirteen different hosts, L. van den **Berghe**, M. **Chardome** & E. **Peel** (3); Transmission of *Trypanosoma rhodesiense*, R. M. **Gordon** (1); Infectivity of *Trypanosoma gambiense* to *Cricetomys gambianus*, M. **Larivière**; Transmission of *Trypanosoma gambiense* by fleas, S. **Hamanaka**; Infection of *Nezara viridula* with *Leptomonas*, A. J. **Gibbs**; Transmission of *Histomonas* by *Heterakis* eggs, E. E. **Lund** & R. H. **Burtner**; Transmission of *Leishmania* by *Phlebotomus chinensis*, H. L. **Chung** & L. C. **Feng**; Infection of sandflies with leptomnads of *Leishmania*, A. I. **Lisova**; Transmission of *Leishmania* by sand-flies, S. **Adler**; Vectors of *Leishmania* in Portugal, J. **Ferreira Rés**; Transmission of leishmaniasis in French Guinea, H. **Floch** (1); Experimental *Trichomonas* infections, S. **Iwai**; *Trichomonas* in chick embryos, T. **Kozu** (1), (2); Experimental infection of hamster with *Trichomonas vaginalis*, B. V. **Vershinsky**; Infectivity of *Trichomonas gallinarum* to turkeys, D. K. **McLoughlin** (3); Infectivity of *Trichomonas* to poultry, I. P. **Delappe**; Inability of *Trichomonas tenax* to infect the vagina of rats, R. **Mandoul**, M. **Pestre**, A. **Domenech** & R. **Lacroix**; Transmission of coccidia, C. **Horton-Smith**; Transmission of *Hepatozoon*, H. **Hoogstraal**; Sporulation of *Eimeria zurnii*, W. C. **Marquardt**; Transmission of haemsporidia, P. C. C. **Garnham** (2); *Culicoides* as vectors of *Haemoproteus*, A. M. **Fallis** & D. M. **Wood**; Transmission of *Haemoproteus*, J. R. **Baker** (3); Attempts to discover invertebrate host of *Hepatocystis*, P. C. C. **Garnham** (4); Infection of mosquitoes with human *Plasmodium* spp., R. C. **Muirhead-Thomson** (1); Malaria infections in *Anopheles*, R. M. **Fox**; *Plasmodium* transmitted by *Anopheles aztecus*, P. C. C. **Garnham** & R. **Lainson**; Congenital infections with *Plasmodium*, L. J. **Bruce-Chwatt**; K. J. **Atkins**; Transmission of *Plasmodium falciparum* to non-immune patients, L. J. **Bruce-Chwatt** & F. D. **Gibson**; Vectors of malaria in Nigeria, L. J. **Bruce-Chwatt** (1); Transmission of malaria in Tanganyika, C. C. **Draper** & A. **Smith**; Transmission of *Plasmodium* to infants, H. M. **Gilles**; Transmission of *Plasmodium falciparum*, D. G. **Davey** & G. I. **Robertson**; Development of *Plasmodium malariae* oocysts, R. C. **Muirhead-Thomson** (2); Infectivity of *Plasmodium vivax* to *Anopheles*, P. G. **Shute** & M. **Maryon** (2); Vectors of *Plasmodium knowlesi*, P. C. C. **Garnham**, R. **Lainson** & W. **Cooper** (3); Transmission of *Plasmodium knowlesi*, F. **Hawking**, H. **Mellanby**, R. J. **Terry** & W. A. F. **Webber**; Failure to transmit *Plasmodium reichenowi*, R. S. **Bray** (6); Transmission of *Plasmodium inui*, A. **Mohiuddin**; *Plasmodium ovale* in chimpanzees, R. S. **Bray** (2); Transmission of *Plasmodium berghei* to rats by ingestion of infected mice, E. **Sergent** & A. **Poncet** (2); *Plasmodium berghei* not infective to a hedgehog, E. **Sergent** & A. **Poncet** (3); Transmission of *Plasmodium* from sparrow to surkhas, M. A. R. **Ansari** & A. S. **Nasir** (1); Survival of *Plasmodium lophurae* in mites, C. W. **Durachta** & R. W. **Hull**; Development of *Plasmodium lophurae* in avian hosts, H. B. **Jordan**; Penetration of peritrophic membrane and epithelial cells of gut of *Aedes* by *Plasmodium gallinaceum*, H. **Stohler**; Infectivity of chicks to *Plasmodium*, M. P. **Sciarrone**; Transmission of piroplasms, W. O. **Neitz** (1); Transmission of *Babesia bovis* to man, Z. **Škrabalo** & Ž. **Deanović**; *Anopheles* infected with microsporidia, P. C. C. **Garnham** (1); Transmission of microsporidian among *Anopheles*, E. U. **Canning** (2); Transmission of *Toxoplasma*, C. P. **Beattie**; L. **Jacobs**; Transmission of *Toxoplasma*, E. **Nakajyo**; Congenital transmission of *Toxoplasma*, E. **Thiermann I**; Effect of age of dog on infection with *Toxoplasma*, T. **Simitch**, etc. (2); Experimental canine infections of *Toxoplasma*, T. **Simitch**,

Z. **Pétrovitch**, A. **Bordjochki** & S. **Pop-Cénitch** (1); Experimental avian infections with *Toxoplasma*, S. **Tsuji** (1); Transmission of *Toxoplasma* by cockroaches, A. **Muramoto**.

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**Immunity; Serology.**—Prevention of infection with *Entamoeba* by immunization, R. **Sato**; Absence of cross immunity between *Entamoeba* spp., R. **Sato** & M. **Kaneko**; Complement fixation test for *Entamoeba*, R. **Wells**; Precipitin test for amoebiasis, J. C. **Moan**; New antigen for amoebic complement fixation test, H. J. **Heinz**, W. **Brauns** & G. M. **MacNab**; Neutralization reaction in trypanosomiasis, M. A. **Soltys** (1); Agglutinins in trypanosomiasis, M. A. **Soltys** (2); Antigenic relationships of haemoflagellates, D. V. **Moore**; Anti-organ sera on malaria and trypanosomiasis, F. C. **Goble** & J. L. **Boyd** (1); Relationship between polymorphism and antibody formation in *Trypanosoma*, M. T. **Ashcroft**; Immunology of infection with *Trypanosoma cruzi*, T. **Pizzi** (2); Anti-*Trypanosoma cruzi* factors in chicken sera, T. **Borsos** & L. G. **Warren**; Immunity to *Trypanosoma lewisi*, A. C. **Chandler** (2); Duration of immunity to *Trypanosoma equiperdum*, W. **Cantrell**; Effect of alteration of properdin levels on *Trypanosoma congolense*, F. C. **Goble** & J. L. **Boyd** (2); *Trypanosoma vivax* antibody in serum, R. J. **Terry**; Cross reactions between *Trypanosoma cruzi* and *Leishmania*, Z. **Brener** & J. **Pellegrino**; Serological response to *Leishmania* infections in dogs, T. **Simitch**, etc. (3); Purified antigen for

kala-azar test, K. A. **Monsur** & K. A. **Khaleque**; Cross-immunity between pathogenic and non-pathogenic *Histomonas*, E. E. **Lund**; Serological tests with trichomonads, H. **Baba** (3); Acquired immunity to *Eimeria bovis*, C. M. **Senger**, D. M. **Hammond** & J. L. **Thorne**; Effect of reinfection with *Eimeria tenella* on serum proteins of chicks, T. **Martynowicz** & A. **Seniów**; Serum protein changes in *Plasmodium* infections, A. W. **Woodruff**; Transmission of immunity to *Plasmodium berghei* to young rats, P. G. **Serguiev** & N. A. **Demina**; Acquired immunity to *Plasmodium berghei*, A. **Corradetti** & F. **Verolini**; Effect of reinoculation of mice cured of *Plasmodium berghei* infection by chloroquine, P. M. **Carrescia** & G. **Arcoleo** (3); Influence of immunity upon *Plasmodium*, P. C. C. **Garnham** & R. S. **Bray**; Cross-immunity between strains of *Plasmodium vivax*, E. **Teriteanu**, etc.; Immunity of piroplasms, W. O. **Neitz** (2); Agglutination test for *Toxoplasma*, L. **Jacobs** & M. N. **Lunde** (1), (2); Effect of ions on dye-test for toxoplasmosis, A. **Westphal**, E. **Bimmer** & G. **Palm**; Immunity to *Toxoplasma* in newborn rats, E. K. **Markell** & W. P. **Lewis**; Antigenicity of proteins from *Toxoplasma*, W. A. **Hook** & J. E. **Faber**; Fluorescein-antibody stain for *Toxoplasma*, M. **Goldman** (1), (2); *Toxoplasma* stained with fluorescein-labelled antibody, R. K. **Carver** & M. **Goldman**; Value of dye-test for *Toxoplasma*, I. A. B. **Cathie**; Effect of sera on *Toxoplasma*, H. **Arai**; Serological distinction between *Toxoplasma* and *Encephalitozoon*, H. **Tazaki**; Cross immunity to *Toxoplasma* and *Encephalitozoon*, S. **Tsuji** (2).

[Protozoa in relation to Disease—see under **Economics**.]

#### PARASITISM.—HOSTS.

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Parasitic protozoa in marine animals caught at Plymouth, England, **Marine Biological Ass.**

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### Other Mammalia :

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*Trypanosoma cruzi*-like protozoa from wild animals (U.S.A.), M. M. **Brook**, L. **Norman**, D. **Allain** & G. W. **Gorman**.

*Akodon brevicauda santamartae*, blood (Venezuela): *Babesia rodhaini* (Haemosporid.), E. G. **Vogelsang** & P. **Gallo**.

*Apodemus sylvaticus* (Sicily): *Sarcosporidia*, H. E. **Kramptiz**.

*Atherurus africanus centralis*, blood (Belgian Congo); *Plasmodium atheruri* sp. n. (Haemosporid.), L. van den **Berghe**, E. **Peel**, M. **Chardome** & F. L. **Lambrecht** (2).

*Bos bubalis*, intestine (Egypt); *Entamoeba bubalis* sp. n., M. H. **Haiba**.

*Bos indicus*, caecum (W. Pakistan): *Buxtonella sulcata* (Holotrich), G. **Lubinsky** (4).

*Bubalus bubalis*, caecum (W. Pakistan): *Buxtonella sulcata* (Holotrich), G. **Lubinsky** (4).

Calves, intestine (Bulgaria), *Trichomonas bovis* sp. n. (Mastig.), P. **Pavlov** & S. **Dimitrov**.

*Canis familiaris*, outbreak of trypanosomiasis, R. J. **Gómez Rodríguez**.

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Chimpanzee, blood: *Plasmodium reichenow*, R. S. **Bray** (4).

*Citellus variegatus utah*, intestine (U.S.A.): *Isospora citelli* sp. n., N. D. **Levine**, V. **Ivens** & F. J. **Kruidenier** (2).

Cow, blood (Rumania): *Cytocetes bovis* sp. n., A. C. **Oprescu**.

*Cricetomys dissimilis*, intestine (Belgian Congo): *Eimeria schoutedeni* (Coccid.), L. van den **Berghe** & M. **Chardome**.

*Didelphys marsupialis*, kidney (Venezuela): *Klossiella tejerae* sp. n., J. V. **Scorza**, J. F. **Torrealba** & C. **Dagert**.

*Didelphys marsupialis aurita*, blood (Brazil): *Trypanosoma cruzi*, A. F. **Siqueira**, A. E. A. **Magalhaes** & S. F. M. **Rêgo**.

*Didelphys paraguayensis*, blood (Brazil): *Trypanosoma cruzi* (Mastig.), L. M. **Deane** & M. P. **Deane**.

*Didelphys paraguayensis*, blood (Brazil): *Trypanosoma freitasi* sp. n. (Mastig.), S. F. M. **Rêgo**, A. E. A. **Magalhaes** & A. F. **Siqueira**.

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Dogs (Japan): *Toxoplasma* and intestinal protozoa, H. **Matsumoto** (1).

Dog, intestine (India): *Entamoeba histolytica* (Rhizop.), M. S. **Ganapathy** & V. S. **Alwar**.

Dog (U.S.A.): leishmaniasis in an imported animal, C. A. **Gleiser**, J. **Thiel** & I. G. **Cashell**.

*Helogale undulata rufula*, blood (Kenya), *Babesia heischii* and *B. hoareii* (Haemosporid.), M. S. **Grewal** (1), (2).

*Heterocephalus glaber* (Kenya): description of protozoa observed, A. **Porter**.

*Jaculus* sp., blood (Egypt), *Hepatozoon balfouri*, H. **Hoogstraal**.

*Microtus agrestis*, blood (Czechoslovakia): *Hepatozoon microti* (Greg.), *Grahamnella*, Z. **Cerna** (2).

*Miniopterus schreibersi*, blood (Sicily): *Polychromophilus melani-ferus* (Haemospor.), H. E. **Kramptiz**.

*Mus musculus* (Sicily): *Sarcosporidia*, *Trypanosoma duttoni* (Mastig.), H. E. **Kramptiz**.

*Mustela furo* (England): *Toxoplasma*, R. **Lainson**.



*Mustela nivalis* (England): *Toxoplasma*, R. **Lainson**.

*Perameles nasuta* (Australia): *Toxoplasma*, J. H. **Pope**, V. A. **Bicks** & I. **Cook**.

*Perodicticus potto ibeanus*, blood (Belgian Congo): *Trypanosoma* sp., L. van den **Berghe**, M. **Chardome** & E. **Peel** (4).

*Perodicticus potto ibeanus*, blood (Belgian Congo); *Theileria perodictici* (Haemosporid.), L. van den **Berghe**, E. **Peel** & M. **Chardome** (3).

*Perodicticus potto ibeanus*, blood (Belgian Congo); *Trypanosoma iran-giense* sp. n. (Mastig.), L. van den **Berghe**, E. **Peel** & M. **Chardome** (4).

*Phascolumys ursinus*, gut (Vienna, Zoological Gardens): *Eimeria tasmaniae* sp. n. & *E. ursini* sp. n., R. **Supperer**.

*Pipistrellus kuhli*, blood (Sicily): *Trypanosoma vespertilionis* (Mastig.) H. E. **Krampitz**.

*Pitymys savii*, blood (Sicily): *Hepatozoon pitymysi* (Coccid.), H. E. **Krampitz**.

Polecat-ferret hybrid (England): *Toxoplasma*, R. **Lainson**.

*Rattus assimilis* (Australia): *Toxoplasma*, J. H. **Pope**, V. A. **Bicks** & I. **Cook**.

*Rattus norvegicus*, (England): *Toxoplasma*, R. **Lainson**.

*Rattus norvegicus* blood (Sicily): *Hepatozoon muris* (Coccid.), H. E. **Krampitz**.

*Rattus norvegicus* (Australia): *Toxoplasma*, J. H. **Pope**, V. A. **Bicks** & I. **Cook**.

*Rattus rattus* (Sicily): *Trypanosoma levisi* (Mastig.), *Sarcosporidia* (Sporoz.), H. E. **Krampitz**.

Rodents (Czechoslovakia); coccidia observed, B. **Ryšavý** (2).

Rodents: new *Eimeria* from Arizona, U.S.A., N. D. **Levine**, V. **Ivens** & F. J. **Kruidenier** (1).

Rodents of Utah desert (U.S.A.); occurrence of *Chilomastix*, F. R. **Evans**.

Sheep: *Toxoplasma* in animals from slaughter-house, H. de **Roever-Bonnet** (2).

*Sorex araneus*, blood (Czechoslovakia); *Grahamella soricis*, sp. n., M. **Privora**.

*Sorex araneus*, blood (Czechoslovakia): *Grahamella*, Z. **Cerna** (2).

*Sorex minutus*, blood (Czechoslovakia): *Hepatozoon microti* (Greg.), Z. **Cerna** (2).

Squirrels, intestine (Yugoslavia); *Eimeria serbica* sp. n., S. **Pop-Cenitch** & A. **Bordjochki**.

*Sylvilagus floridanus mearnsi*, intestine (U.S.A.): *Eimeria* sp. (Coccid.), D. H. **Ecke** & R. E. **Yeatter**.

*Tachyglossus aculeatus*, blood (Australia); piroplasm (Haemosporid.), T. C. **Backhouse** & A. **Bolliger**.

*Tadarida brasiliensis mexicana*, blood (U.S.A.), unknown blood parasite, E. **Lesser**, K. F. **Burns** & C. J. **Farinacci**.

*Talpa europea*, gut (Italy): *Isospora talpae* sp. n., I. **ricci**, *Cyclospora carylytica* (Coccid.), G. **Agostinucci**.

*Taurotragus onyx pattersonianus*, blood (Kenya); *Theileria mutans*, L. van den **Berghe**.

*Thylacis obesulus* (Australia): *Toxoplasma*, J. H. **Pope**, E. H. **Derrick** & I. **Cook**; J. H. **Pope**, V. A. **Bicks** & I. **Cook**.

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Birds of the Punjab: survey of blood protozoa, M. A. R. **Ansari** & A. S. **Nazir**.

Blood protozoa in N. American birds, C. M. **Herman**.

List of parasites observed in birds (Tetraonidae) in forests of U.S.S.R., I. M. **Oliger**.

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*Atoxoplasma* and *Toxoplasma* of birds, D. M. **Zasukhin**, S. G. **Vasina** & P. B. **Levitanskaya**.

Canaries: *Plasmodium cathemerium* (Haemosporid.), W. J. **Mathey** (2).

*Corvus splendens*, blood (Pakistan): *Babesia moshkovskii*, M. Laird & F. A. Lari.

Fowl, blood (India): *Leucocytozoon* (Haemosporid.), G. R. Ramaswami.

*Francolinus erckeli*, intestine (Italy): *Histomonas meleagridis* (Mastig.), I. Giavarini.

*Francolinus* sp., blood (India): *Leucocytozoon* sp. (Haemosporid.), B. S. Gill & H. N. Ray (1).

Geese and swans (Canada and United States): coccidia observed, H. C. Hanson, N. D. Levine & V. Ivens.

Guinea-fowl, blood (Philippines): *Anaplasma*-like parasite, D. J. Cabrera.

Magpie, blood (U.S.A.): incidence of blood parasites, A. F. Hagen.

*Passer domesticus domesticus*, blood (U.S.A.), blood parasites, R. D. Manwell (1).

*Pica pica hudsoni*, blood (U.S.A.): list of blood parasites observed, A. F. Hagen & O. W. Olsen.

Pigeons: *Plasmodium relictum* (Haemosporid.), W. J. Mathey (1).

Pigeons, blood (U.S.A.): *Haemoproteus sacharovi*, *Plasmodium relictum* (Haemosp.), E. R. Becker, W. F. Hollander & J. N. Farmer.

*Rissa tridactyla tridactyla*, intestine (Wales): *Eimeria rissae* sp. n. (Coccid.), E. J. L. Soulsby & A. R. Jennings.

*Spinus spinus* (U.S.S.R.): *Atoxoplasma* sp. (Sporoz.), D. Sassuchin, S. Wassina & P. Levitanskaja.

*Zenaidura macroura carolinensis*, blood (U.S.A.): incidence of *Haemoproteus* and *Leucocytozoon* (Sporid.), H. C. Hanson, etc.

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*Ameiva ameiva ameiva*, blood (Venezuela): *Plasmodium pifanoi*, sp. n. (Haemosporid.), J. V. Scorza & C. Dagert B. (2).

*Anolis* sp., blood (Venezuela): *Plasmodium torrealbi* sp. n. (Haemosporid.), J. V. Scorza & C. Dagert B. (1).

*Coluber karolini*, blood (India), haemogregarine, G. H. Ball (2).

*Lacerta agilis*, intestine (Czechoslovakia): *Trichomonas augusta* (Mastig.), J. Kulda.

*Lacerta vivipara*, intestine (Czechoslovakia): *Trichomonas augusta* (Mastig.), J. Kulda.

*Mochlus fernandi*, blood (Belgian Congo): *Trypanosoma mochli* sp. n. (Mastig.), L. van den Berghe, M. Chardome & E. Peel (5).

*Natrix piscator*, blood (Pakistan): new trypanosome (Mastig.), S. M. Haq & A. Mohiuddin.

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Recent records of protozoa parasitic in Amphibia, A. C. Walton.

Ciliates found in Amphibia in Bucarest, I. Căpușe & D. Dancău.

New intestinal opalinids and ciliates from amphibia in Viet-Nam. C. Boisson (2).

*Bufo regularis*, blood (French Congo): *Haemogregarina lavieri* (Coccid.), O. Tuzet & A. Grjebine.

*Rana tigerina*, rectum (India): *Opalina scalpriformis* (Mastig.), C. Bal & P. V. Ranjini.

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Parasitic protozoa of fish, O. N. Bauer.

Fish (Russia): parasitic protozoa, E. S. Kudryavtzeva, E. S.

Fish of Ribinsk reservoir: parasitic protozoa, V. P. Stolyarov.

Parasitic protozoa of fish in the Izgiz-Turkish basin, E. G. Sidonov.

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Fish from Czechoslovakia, blood; *Trypanoplasma* (Mastig.), Z. **Lucký**.

Fish, blood (England): occurrence of trypanosomes and trypanoplasms, F. **Hawking**.

Parasitic protozoa in Czechoslovak fish, V. **Dyk** & Z. **Lucký** (1).

Flagellate and ciliate parasites from Indian fish, Y. R. **Tripathi**.

Fish (Venezuela) infected with *Ichthyophthirius*, E. G. **Vogelsang** & F. H. **Weibezahn**.

Myxosporidia from salmonids, W. T. **Yasutake** & E. M. **Wood**.

*Alburnus alburnus*, urinary bladder (Moravia); *Trichodina alburni* sp. n. (Peritrich, Cil.), J. **Vojtek**.

*Anguilla anguilla*, gall bladder (France); *Ceratomyxa anguillae* sp. n. (Myxosporid.), O. **Tuzet** & R. **Ormieres**.

*Anguilla japonica*, blood (Japan); *Trypanosoma* sp. (Mastig.), T. **Hoshina** & T. **Sano**.

*Callionymus lyra*, protozoa found in fish caught at Plymouth, England, E. R. **Noble**.

Carp: parasitic protozoa, V. M. **Ivassik**.

*Crenilabrus mediterraneus*, blood (France); protozoan of unknown affinities, L. **Bouisset**, M. **Sicart** & J. **Ruffie**.

*Cyprinus carpio*, muscle (Japan); *Thelohanellus cyprini* sp. n. (Myxosporid.), T. **Hoshina** & S. **Hosoda**.

*Gadus merlangus*, protozoa found in fish caught at Plymouth, England, E. R. **Noble**.

*Galaxias maculatus*, muscle (Argentina); *Myxobolus magellanicus*, sp. n., M. *galaxii*, sp. n. (Sporoz.), L. **Szidat**.

*Microstomus kitt*, protozoa found in fish caught at Plymouth, England, E. R. **Noble**.

*Neolebias*; ectoparasitic dinoflagellates, *Oodinium pillularis*, H. H. **Reichenbach-Klinke** (2).

*Salmo salar* (U.S.S.R.); parasitic protozoa observed, O. **Bauer**.

Sturgeons: parasitic protozoa, S. S. **Shulman**.

Tench, parasites observed in fish taken from the Donets River, U.S.S.R., M. S. **Komarova**.

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Cultivation of haemoflagellates from Texas insects, A. **Packchanian** (2).

*Acrotelsa collaris*, gut (Ceylon); *Lepismatophila thermobiae*, *Colepismatophila watsonae*, H. **Crusz**.

*Anopheles gambiae*: *Plistophora culicis*, E. U. **Canning** (1).

*Anopheles gambiae*, Malpighian tubules (captive, England); *Plistophora culicis* (Microsporid.), E. U. **Canning** (2).

*Anopheles stephensi*: *Plistophora culicis*, R. **Lainson** & P. C. C. **Garnham**.

*Aporia crataegi* (Czechoslovakia); *Nosema aporivora* from caterpillars, J. **Veber** (1).

*Bibio* larvae, intestine (Bavaria); *Scheideria mucronata*, *Nosema bibionis* sp. n., *Duboscqia bibionidarum* sp. n., *D. philiae* sp. n., *Plistophora enterobia* sp. n., *P. amasiae* sp. n., H. J. **Stammer** (1).

*Blatta orientalis*, midgut (India); *Stenophora* sp., C. **Bal** & B. P. **Rai**.

*Ceuthosphodrus oblongus*, intestine (France); *Actinocephalus permagnus* (Greg.), J. **Théodoridès** (1).

*Chiroscetis digitata*, gut (Belgian Congo); *Nyctotherus obesus* (Cil.), O. **Tuzet** & J. **Théodoridès** (2).

Cockroach, haemocoel (India); *Diplocystis* sp., H. N. **Ray** & B. **Dasgupta**.

*Diastrammena japonica*, (Japan), *Gregarina diastremmenae* sp. n. (Greg.), H. **Hoside** (1).

*Diastrammena japonica* intestine (Japan); *Gregarina monoducta* sp. n. (Greg.), H. **Hoside** (2).

*Hydrophilus pistaceus*, intestine (France); *Nyctotherus gyeryanus* (Cil.), J. **Théodoridès** (2).

*Hydropsyche* larva, intestine (Japan); *Pileocephalus hydropsychus* sp. n. (Greg.), H. **Hoside** (3).



*Lepisma saccharina*, gut (England): *Gregarina lagenoides*, *Lepismatophila thermobiae*, H. **Crusz**.

*Lymantria dispar* (Czechoslovakia): *Nosema lymentriæ*, *N. muscularis* (Microsporid.), J. **Weiser**.

*Machilis tenuis*, intestine (France), *Hyalospora roscoviana*, *Dinematospora grassei* gen. n., sp. n. (Greg.), O. **Tuzet**.

*Nezara viridula*, gut (S. Africa), *Leptomonas serpens* sp. n., A. J. **Gibbs**.

*Nygma paeorrhoea* (Czechoslovakia): *Thelohania similis* (Microsporid.), J. **Weiser**.

*Odontotermes assmuthi* (Lucknow, India): list of *Hypermastigina* observed, N. **Narain** (3).

*Pandemis corylana* (Czechoslovakia): *Platophora pandemis* (Microsporid.) from caterpillars, J. **Veber** (2).

*Peliolipisma calva*, gut (Ceylon): *Lepismatophila* sp., *Colepismatophila* sp., *Garnhamia aciculata*, H. **Crusz**.

*Pieris brassicae* (Germany): microsporidian parasites, H. **Blunck**.

*Prioscelis serrata*, gut (Belgian Congo); *Nyctotherus obesus* sp. n. (Cil.), O. **Tuzet** & J. **Théodoridès** (2).

Stone fly larva, intestine (Japan): *Actinocephalus kintaikyogensis* (Greg.), H. **Hoside** (3).

*Thermobia domestica*, gut (England): *Lepismatophila thermobiae*, H. **Crusz**.

### Myriapoda:

Species of *Nyctotherus* observed in Myriapoda from Belgian Congo, O. **Tuzet** & J. **Théodoridès** (1).

Diplopods, intestine (Belgian Congo); description and list of ciliates observed, O. **Tuzet**, J. F. **Manier** & P. **Jolivet** (1); description of gregarines observed, O. **Tuzet**, J. F. **Manier** & P. **Jolivet** (2).

*Glomeris marginata*, protozoa observed, O. **Tuzet** & J. F. **Manier**.

### Crustacea:

Gregarines in marine Crustacea (India), G. H. **Ball** (1).

*Artemia salina* (Rumania): *Nosema exigua* n. sp., *Glugea artemiae* n. sp. and *Gurleya dispersa* n. sp. (Microsporid.), R. **Codreanu**.

*Asellus aquaticus* (Czechoslovakia), ectoparasitic ciliates, J. **Buchar**.

*Cyclops*, intestine (Poland); *Astasia cyclops* sp. n. (Mastig.), W. **Michajłow**.

*Palaemon varians* (France), *Chattonia lenticularis* (Cil.), P. **Debaisieux**.

### Echinodermata:

*Strogilocentrotus droebachiensis*, gut (U.S.S.R.); *Schizocaryum dogieli* (Cil.), G. **Poljansky** & M. **Golikowa**.

### Mollusca:

*Deroceras reticulatum*, renal organ (U.S.A.), *Tetrahymena rostrata*, E. N. **Kozloff** (1).

*Oncomelania*, mantle cavity (China); *Cochliophilus oncomelaniae* sp. n. (Cil.), T. **Tchang**, C. **Tang** & S. **Wang**.

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Oligochaetes: Astomate ciliates found in Murman, Russia, E. N. **Frolova**.

Oligochaetes: new monocystids from Indo-China, C. **Boisson** (1).

*Fridericia hegemon*, gut (Czechoslovakia), *Jirovecella hegemonis* gen. n., sp. n. (Ciliata), J. **Lom** (4).

*Limnodrilus hoffmeisteri*, body cavity (Poland); *Raabeia magna* sp. n. (Cnidosporid.), J. **Janiszewska** (2).

*Limnodrilus hoffmeisteri*, gut (Poland); *Aurantiactinomyxon raabei iunioris*, gen. n., sp. n. (Cnidosporid.), J. **Janiszewska** (2).

*Tubifex tubifex*, gut (Poland); *Echinoactinomyxon radiatum* gen. n. sp. n., *Raabeia gorlicensis*, *Hexactinomyxon hedvigii* sp. n. (Cnidosporid.), J. **Janiszewska** (2).

*Tubifex* sp. (Black Sea: *Spheractinomyxon stolcii*, I. **Radulescu** & I. **Motilica**.

### Platyhelminthes:

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**Nearctic Region.**—*Canada and Alaska.*—List of fresh-water protozoa found in Alaska, **W. D. Sullivan**. *United States.*—Distribution of amoebae in Florida, **E. C. Bovee** (2). *South America.*—Protozoa from Colombia, **E. C. Bovee** (3).

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